

(12) UK Patent Application (19) GB (11) 2 322 297 (13) A

(43) Date of A Publication 26.08.1998

(21) Application No 9703809.5

(22) Date of Filing 24.02.1997

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(51) INT CL⁶
A45B 3/00, B25J 1/04, E01H 1/12

(52) UK CL (Edition P)
A4P PAA P216

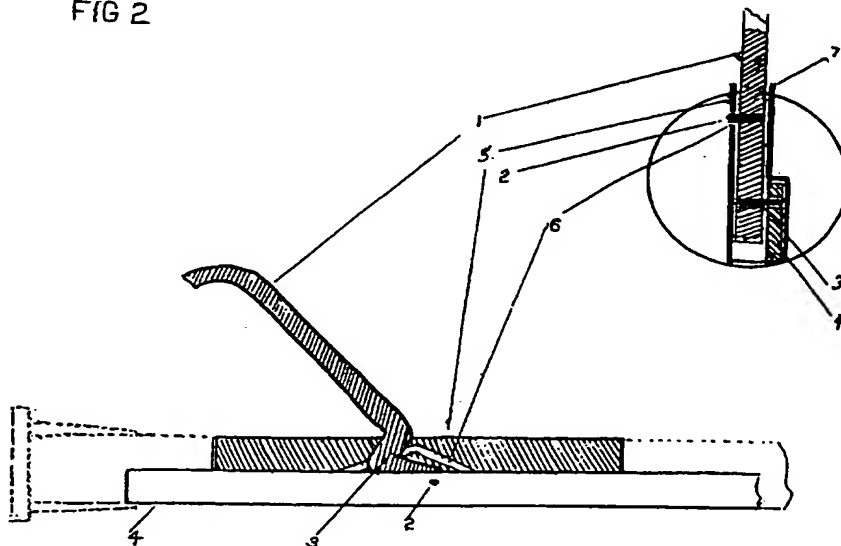
(56) Documents Cited
GB 2301526 A GB 2122077 A GB 2044610 A
US 4200322 A US 3763872 A

(58) Field of Search
UK CL (Edition P) A4A AE12, A4P PAA, B4W
INT CL⁶ A45B 3/00, B25J 1/04, E01H 1/12
Online: WPI, CLAIMS

(54) Abstract Title
Walking stick with sliding gripper claw

(57) A hollow walking stick includes a claw 1 pivoted at 2 to a sliding bar 4. A second pin 3 on the claw engages a slot 6 having portions which diverge from and converge on the line of the stick. The slider is moved by a lever on the handle of the stick by means of a pulley and cord system (Figs 4,5) whereby the claw, as it moves with the slider, is constrained to pivot away or towards the stick through inter-action of the pin 3 with the slot 6. A spring may bias the slider to its uppermost position.

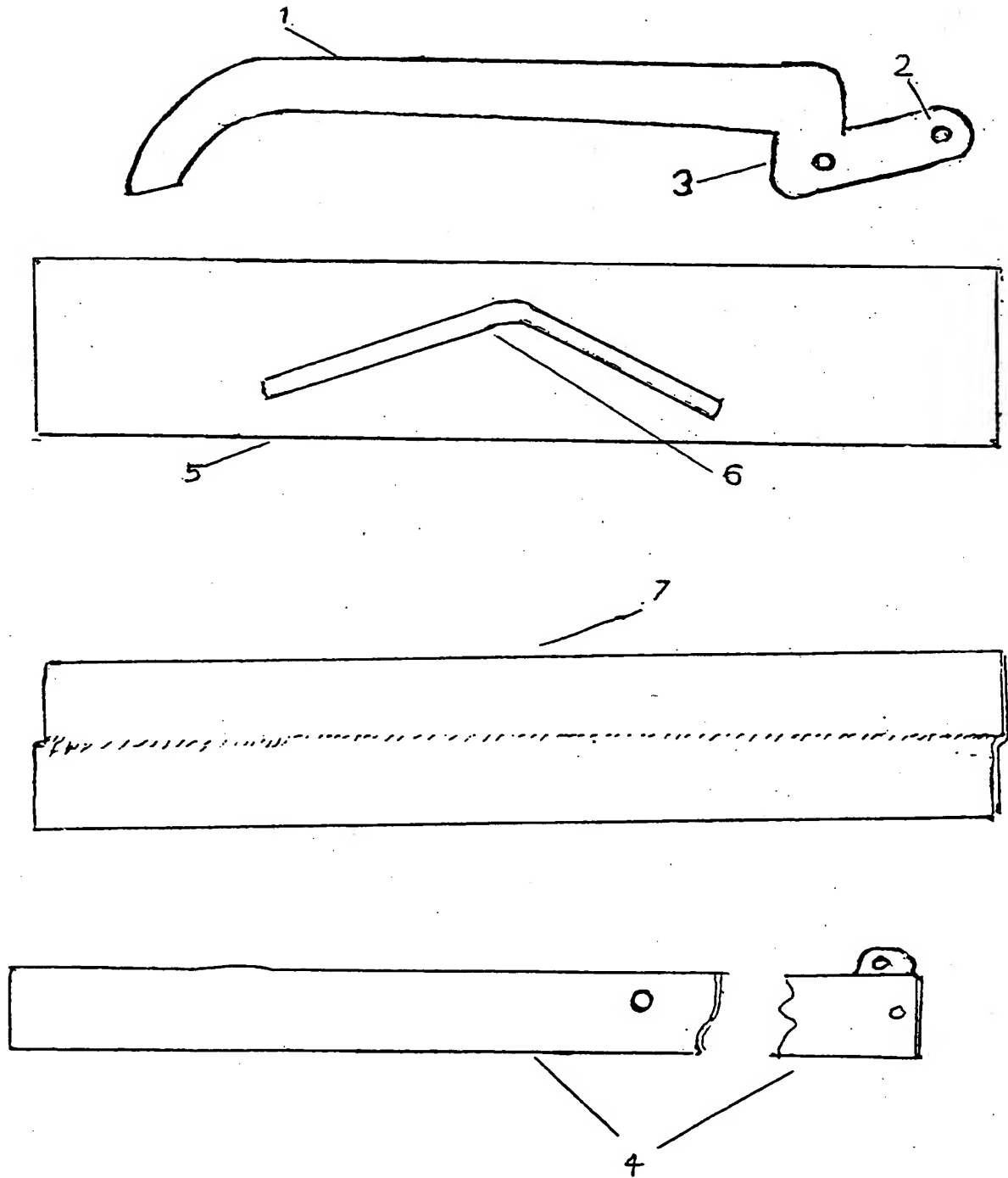
FIG 2



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FIG 1



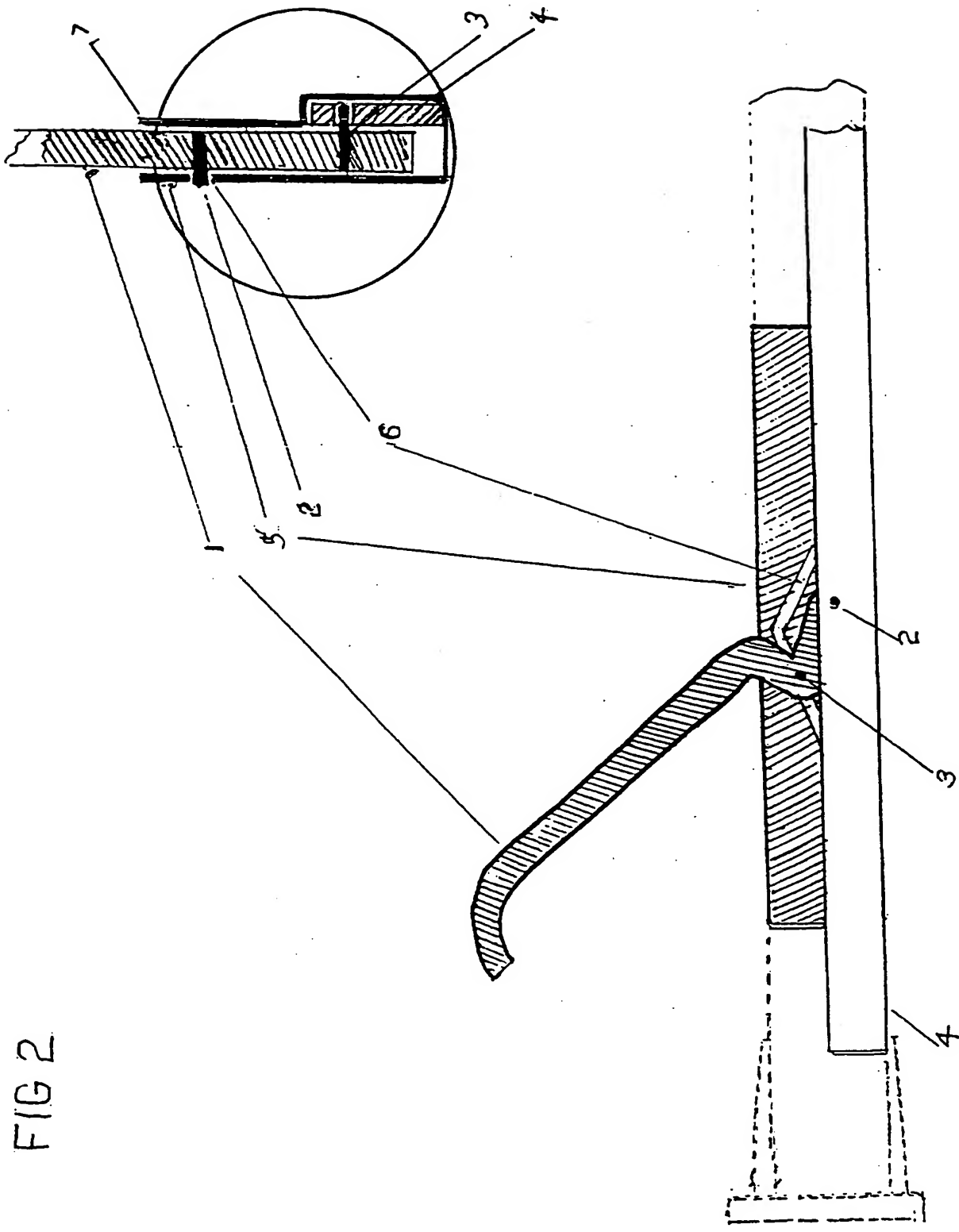


FIG 2

FIG 3

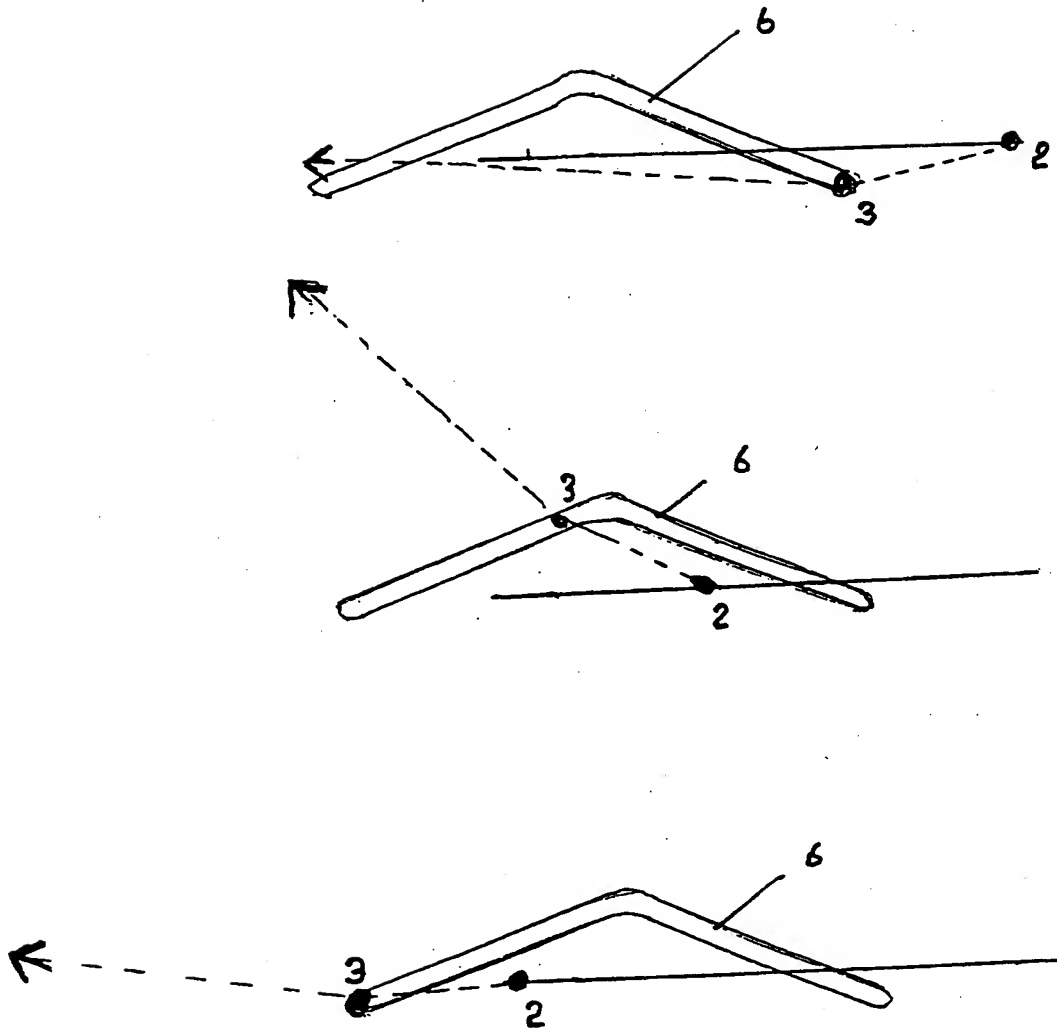


FIG 4

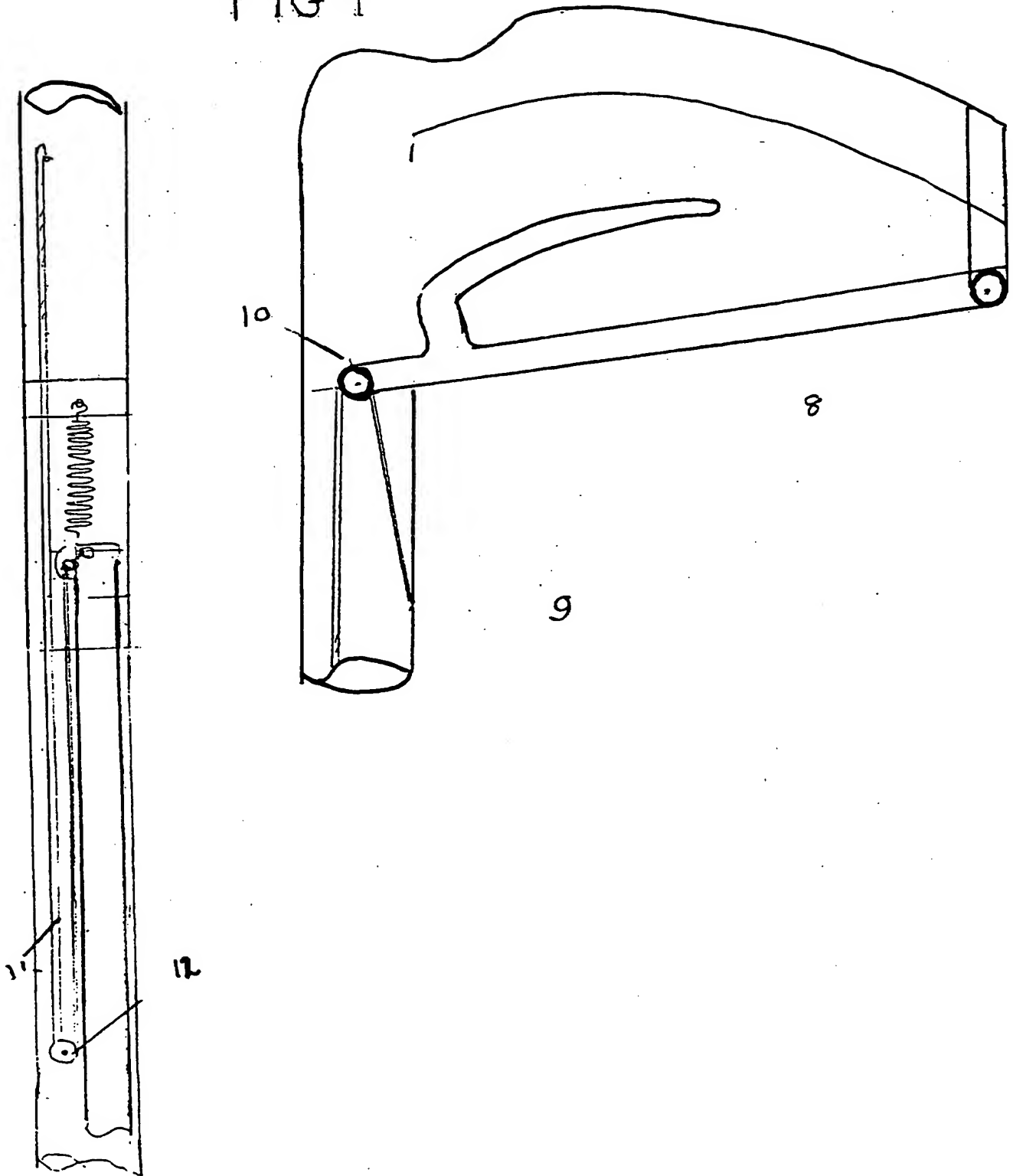
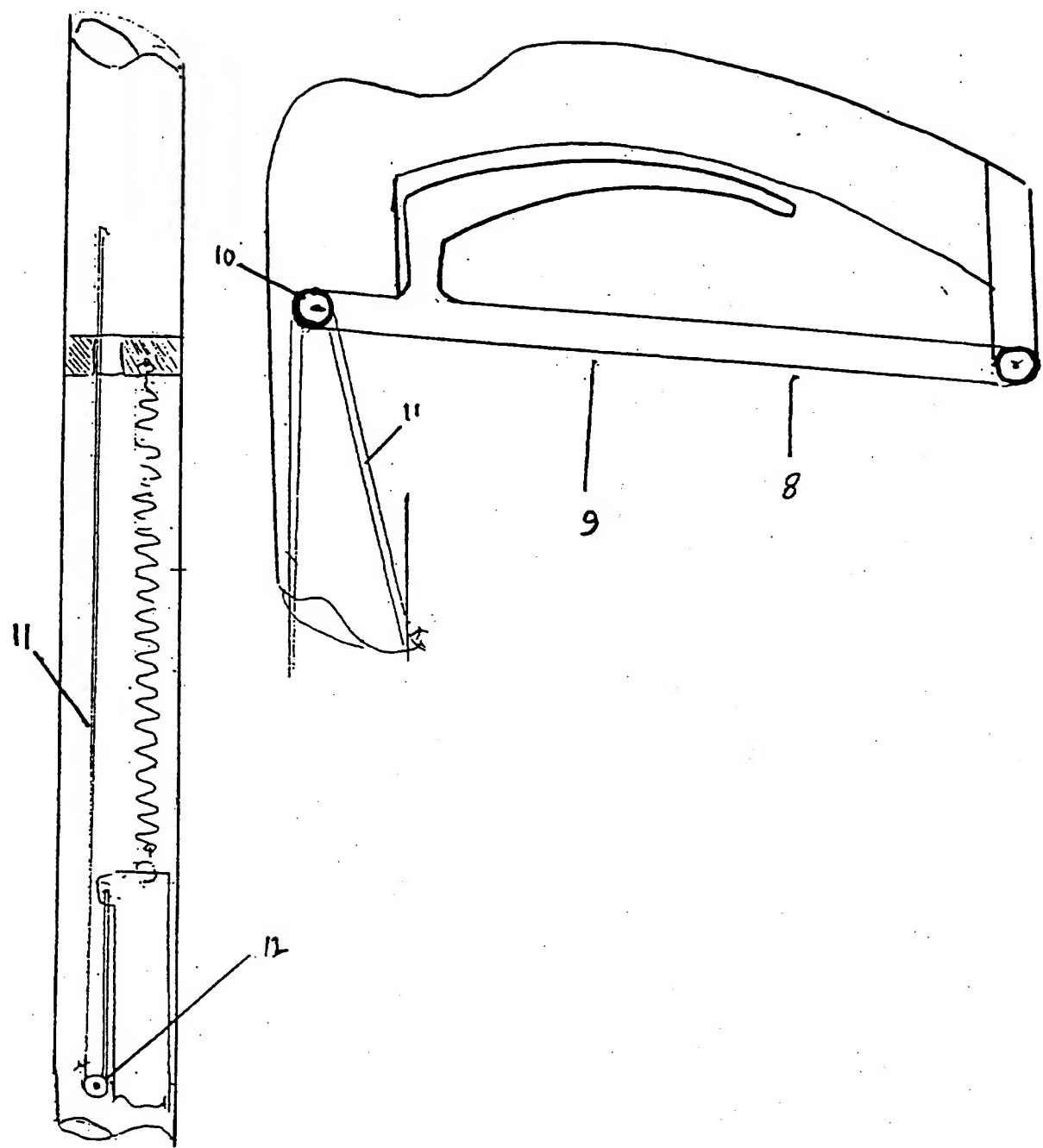


FIG 5



WALKING STICK WITH A SLIDING RETRACTILE CLAW

This invention refers to a walking stick with a sliding retractile device for picking up small objects.

Walking sticks and picking up devices such as "lazy tongs" or reachers are almost a necessity for very elderly, or disabled people. A combination of the two would be a great convenience for such people. There is one type of walking stick with a spring loaded claw attached to it and arranged to grip objects against the ferrule. It is however difficult to use, depending on heavy downward pressure on a hard surface to open the claw and is difficult to use. It and is therefore of limited value. There is a need for a stick with a picking up arrangement which is operated from the handle of the stick.

According to the present invention a mechanism is provided to open and shut a claw suitable for picking up small objects, and to slide it downward. It is inserted in a hollow walking stick. It consists of four parts; a claw with two pins fixed in it, a sliding bar, a slot which diverges from the line of the stick and then converges on it. For convenience this is called the guide slot. The first pin, a pivot, is inserted in the sliding bar and moves with it. The second pin, called the guide pin, is arranged to slide along the guide slot when the bar is moved towards the end of the stick. A cover plate is provided to keep the guide slot, the claw, and the sliding bar in contact. A cord and pulley system joins the sliding mechanism to a lever on the handle of the walking stick and a spring in tension is used to withdraw the claw to the closed position after use.

A specific example of the invention is described and illustrated below as an example. In the text and in drawings 2 and 13 and the text, numbers are always associated with or indicate the objects they are associated with in Figure 1.

Figure 1 shows the four components of the mechanism which controls the movement of the claw. First is the claw itself 1, with its pivot pin 2, and guide pin 3. The guide pin is inserted into the hole in the longer part of the sliding bar. 4. The claw therefore slides along the stick with it, and would be free to flap in an uncontrolled manner if it were not for guide pin 3 which slides along the guide slot 6 as the bar 4 moves the pivot pin. Starting from the upper end of the travel of the bar (right hand side of the slot) as the pivot pin is moved downward in a straight line, the guide pin is forced along the divergent direction of the guide slot opening the claw by its divergent movement until it reaches the curve in the slot and the pivot pin has covered half its

travel. Further movement of the bar and pivot pin bring the guide pin towards, and across the path of the pivot pin, thus bringing the claw against the ferrule.

Figure 2 shows a cross section of the midpoint of the mechanism enlarged to twice its natural size, and also a side view of the mechanism with the cover plate removed. In the latter drawing the pivot pin 2 has travelled a little way beyond half way to the end of its travel, and the claw has begun to close, with the guide pin 1 having passed a little way beyond the curve in the guide slot.

Figure 3 illustrates the movement described above diagrammatically. The solid black line is the length of travel of the pivot pin and the pecked line terminating in an arrow represents successive positions of the claw in relation to the positions of the pivot pin.

Figure 4 shows the operating lever 8 with a spur-like trigger 9, and the cord 11 which transmits movement from the lever via pulley 10, which serves to increase the movement obtainable on the lever and then round pulley 12, which reverses the upward pull of the lever to a downward pull on the sliding bar applied to the sliding bar 4.

Figure 5 shows all the same components as Figure 4, but in positions they would occupy when the trigger 9 has been pulled up against the handle. This causes the cord to exert a downward pull on the sliding bar 4 and stretches the spring 13. When the trigger is released the spring will contract, drawing the sliding bar upwards to the position shown for it in Figure 4.

VARIANTS 1 There are some purposes for which it would be more convenient to employ two claws engaging each other instead of one claw gripping against the ferrule. This is provided for by using the sliding bar 4 to operate a duplicate claw with its two pins 1, 2, & 3, and the guide plate and guide slot, and arranging them in identical positions on each side of the sliding bar, using a common pivot pin, and moving the mechanism sufficiently low on the stick for the two claws to meet beyond the ferrule.

2 Alternatives to the shallow inverted "V" form of the guide slot can be an arc, or a curve with various radii for different parts of the slot 6

CLAIMS

1 A walking stick with a sliding retractile claw, which can be opened, slid downward and closed against a rubber ferrule gripping any small object in its way: these movements being obtained by the divergent paths of two pins, one of which derives movement in a straight line from a sliding bar while the other is forced along a diverging and converging slot, thus opening and closing the claw..

2 A walking stick as claimed in claim 1, and using the same mechanism 1 but with two sliding retractile claws meeting below the ferrule.

3 A walking stick with a sliding retractile claw as claimed in claim 1, wherein the movement for the retractile and sliding mechanism is derived from a lever with a spur-like trigger, which is pivoted at the end of the handle.

4 A walking stick with a sliding retractile claw as claimed in claim 1 and claim 2, wherein the movement of the lever is transmitted to the sliding mechanism by a cord and passing over two pulleys, one to increase the movement at the lower end and the other to reverse the pull.

5 A walking stick with a sliding retractile claw as claimed in claim 1, wherein a ring of triangular section moulded onto the ferrule to engage in a groove in the head of the claw to obtain a better grip

5 A walking stick with a sliding retractile claw as claimed in claim 1 wherein a metal projection to improve the grip of the claw is inserted in the rubber ferrule. is inserted in it

Amendments to the claims have been filed as follows

1. A walking stick with a sliding retractile claw, which can be opened, slid down the stick and closed against a ferrule, gripping any small object in its way. These movements being obtained by the divergent paths of two pins fixed in the claw, one of which derives its movement in a straight line from a sliding bar while the other is forced along a diverging and converging slot, thus opening and closing the claw.
2. A walking stick with a sliding retractile claw as claimed in claim 1, wherein the movements of claw and mechanism are derived from a lever pivoted at the end of the handle.
3. A walking stick with a sliding retractile claw as in claims 1 and 2 wherein the movement of the lever is transmitted by a cord passing over two pulleys, one to increase the movement at the lower end, and the other to reverse the movement.



Application No: GB 9703809.5
Claims searched: ALL

Examiner: R E Hardy
Date of search: 12 May 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): A4A (AE); A4P (PAA); B4W

Int CI (Ed.6): A45B (3/00); B25J (1/04); E01H (1/12)

Other: Online : WPI, CLAIMS

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2301526 A SCOTT : Whole document	1
A	GB2122077 A HERROD : Whole document	1
A	GB2044610 A MARSH : Whole document	1
A	US4200322 A SMITH : Whole document	1
A	US3763872 A GOOLEY : Whole document	1

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